Survey Protocols for Tahoe Yellow Cress Annual Surveys

1-Survey Date: Date of on the ground survey work

2-Surveyor/E-mail/Affiliation/Telephone: At least list survey leader with their contact information (normally person who has conducted surveys in past); ideally list all participants and contact info. Contact information is very important to include in case questions arise about the survey data.

3-Location: This information will be filled out prior to survey for all known sites. When a new site is found fill out the information for Site name, Site ownership and Legal access.

4-TYC Present: Circle appropriate response after surveying site.

5-Actual number of plants, or estimated plants: After surveying the site this should be a total (or estimate when there are too many plants to count) of all the clusters found at each site. A plant is considered an individual when it is at least 6" from another stem/plant.

6-Amount of person minutes spent in search: Total the time spent on each site, by each individual.

7-Previous plant occurrence: On site with a previous occurrence this will be filled out prior to the survey using the information from past surveys that is stored at NV natural heritage.

8-Date plant last observed: On site with a previous occurrence this will be filled out prior to the survey using the information from past surveys that is stored at NV natural heritage program (NNHP).

9-Cluster: If two clusters are separated by less than 13 m, consider them one cluster. For TYC clusters separated by a distance greater than 13 m, they should be treated as two separate clusters. Use exact measurement, if you can pace it off this is okay just be sure you and your team members are correct in pacing. Refer to 10-GPS coordinates below for additional information about working with and about the logic behind the cluster definition. Page one has space for the first cluster only. Space for clusters two and three can be found on page two, any additional clusters can be found on the additional cluster page; please fill in the cluster number in the blank after cluster.

10-GPS Coordinates: The preferred reading should be in Nad 27, zone 11, if you do not take a reading in this zone or datum make sure you indicate where it was taken. Because the site boundaries have been established, surveyors are only responsible for GPSing TYC clusters/individuals. Most of the GPS units we will be using are only accurate to within 3 to 9 meters (m) and for NNHP Biotics an error within about 6.5 m is acceptable. Therefore, for example, if you find a cluster that is less than 6.5 m in diameter, simply take a central point. For one cluster with a diameter larger than 6.5 m, endpoint or corner coordinates can be taken. If two clusters are separated by less than 13 m, consider them one cluster and either take one point on each of the outer edges or one central point. For TYC clusters separated by a distance greater than 13 m, they should be treated as two separate clusters, and GPS coordinates should be obtained for each cluster (either end points or central points). NNHP will keep track of these clusters, but they will be subsets of the overall population at that site. **It is critical to indicate what and where particular coordinates are from and if they are central points or endpoints in order to ensure proper data interpretation!** Drawing pictures is helpful as well.

Additionally, if you take multiple points for clusters and outlying individuals within a site, document what data you have taken and how it should be interpreted by NNHP.

11- Number of plants in cluster__ Actual Number or Estimated Percentage in each phenological stage (circle one). Juvenile: _____ Senescent: _____ Flowering: _____ Fruiting (may also be flowering): _____ Min. Rosette Diameter (cm): _____ Max. Rosette Diameter (cm):

Record the actual or estimated number of plants within the cluster then circle actual number if you count each individual plant within the cluster or estimated percent if you estimate the phenology of the cluster. Then recorded the number/percent in each of the phenological stages.

The last thing in the box is the min. and max. rosette size within the cluster. **An individual plant is considered to be the number of stems within 6" of each other. When stems become further then 6" it is considered that there is more than one individual.**

12-Elevation/Lake Level: This information will be filled in by NNHP after the survey. If you know the information you can fill it in.

13-Distance to lake water line (meters): Measure meters to Lake Tahoe for each cluster. If there is another body of water closer note this also.

14-Sketch beach profile: Sketch the beach profile and any dominate markers that help to identify the site. Either draw in space provided or use back site of map. If have time, it is nice to also include a map of the locations of each cluster.

15-Substrate/soils: The size for each type of substrate is based on USDA's *Comparison of size particle classes* from the Field Book for Describing Sampling Soils version 2.0. Give a percentage to each category of substrate (make sure this adds up to 100%) for the area within the cluster to 0.3 meters outside of it. If you are unsure use a ruler to measure the substrate until you get a feel for it. It is also a good idea to do the first percentage estimate with the group to try to calibrate everyone into the percentage estimates.

16-Total Vegetation % cover: This is a measurement of how much % cover of vegetation is within each cluster to 0.3 m away from cluster.

17-Associated vegetation: Include any vegetation found within the cluster, include species when possible. Then include the percent cover of each of the species within the cluster; this should add up to 100%. Don't forget to include TYC.

18-Non-native species: Circle yes or no if there are any non-native species found within the cluster. Identify the non-native species with an * next to their names.

19-Land use and impacts: This data is for the whole site, not individual clusters.

20-Cover of footprints/Impacts to site: Record everything that you see within the site, especially if found within actual clusters.

21-Management actions/other notes: Use this for any suggestions or notes about abnormalities, for example, if a cluster of TYC is growing on a 50% slope recorded that information here.